Notice of Allowability	Application No.	Applicant(s)	
	09/663,490	LUKEN ET AL.	
	Examiner	Art Unit	
	Khanh Dinh	2151	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address*--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *10/6/2004*.

2. ☒ The allowed claim(s) is/are *1, 2, 4-11, 13-17, 19-22 and 24-28*.

3. ☒ The drawings filed on *18 September 2000* are accepted by the Examiner.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☒ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☐ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

ZARNI MAUNG
SUPERVISORY PATENT EXAMINER

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Anne Vachon Dougherty (Undersigned Attorney, Reg. No.30.374) on 2/2/2005.

The application has been amended as follows:

IN THE CLAIMS:

Please **cancel** claims 3, 12, 18 and 23.

Please **amend** claims 1, 10, 16, 21, 27 and 28 as follows:

1. (Twice amended) A method for scheduling the delivery of data packets representing one or more media data tracks, said method allowing the data packets to be delivered from a server to a client with a given bandwidth so as to minimize the initial delay required for the client to present the data without interruption, said method including the steps of:

creating a list of virtual data packets representative of all data packets to be scheduled for delivery from the server to the client;

calculating a delivery deadline for each virtual data packet based on the communications bandwidth from the server to the client and a point in time at which the client must act on the data, wherein the delivery deadline for each virtual data packet is calculated as

t(deadline) = t(start) -(packetsize)/bandwidth)

where t(start) is the point in time when the client needs to act on the data contained in the packet, (packetsize) is the number of bytes in the corresponding data packet, and (bandwidth) is the communications bandwidth from the server to the client in bytes per second;

sorting the list of virtual data packets based on the delivery deadlines calculated for each virtual data packet, to provide a sorted list; and

delivering the data packets in accordance with the sorted list.--

--10. (Twice amended) A method for interleaving the data packets representing two or more media data tracks, said method allowing the data packets to be delivered from a server to a client with a given bandwidth so as to minimize the initial delay required for the client to present the data without interruption, said method including the steps of:

creating a list of virtual data packets representative of all data packets to be scheduled for delivery from the server to the client;

calculating delivery deadlines for each virtual data packet based on the communications bandwidth from the server to the client and a point in time at which the client must act on the data, wherein the delivery deadline for each virtual data packet is calculated as

t(deadline) = t(start) -(packetsize)/(bandwidth)

where t(start) is the point in time when the client needs to act on the data contained in the packet, (packetsize) is the number of bytes in the corresponding data packet, and (bandwidth) is the communications bandwidth from the server to the client in bytes per second;

sorting the list of virtual data packets into a sorted list based on the delivery deadlines calculated for each virtual data packet; and

delivering non-sequential data packets based on said sorted list.--

--16. (Twice amended) A method for determining the minimal initial delay required to deliver a sequence of data packets representing one or more media data tracks from a

server to a client without interruption for a given bandwidth, said method including the steps of:

creating a list of virtual data packets representative of all data packets to be scheduled for delivery from the server to the client;

calculating delivery deadlines for each virtual data packet based on the communications bandwidth from the server to the client and a point in time at which the client must act on the data, wherein the delivery deadline for each virtual data packet is calculated as

t(deadline) = t(start) -(packetsize)/(bandwidth)

where t(start) is the point in time when the client needs to act on the data contained in the packet, (packetsize) is the number of bytes in the corresponding data packet, and (bandwidth) is the communications bandwidth from the server to the client in bytes per second;

sorting the list of virtual data packets based on the delivery deadlines calculated for each virtual data packet into a sorted list; and

calculating the initial delay based on the size of the first data packet on said sorted list.--

--21. (Twice amended) A method for determining the minimum size of each media data buffer required by a client to allow the client to receive a sequence of data packets representing one or more media data tracks from a server without interruption for a given bandwidth, said method including the steps of:

creating a list of virtual data packets representative of all data packets to be scheduled for delivery from the server to the client;

calculating delivery deadlines for each virtual data packet based on the communications bandwidth from the server to the client and a point in time at which the client must act on the data, wherein the delivery deadline for each virtual data packet is calculated as

t(deadline) = t(start) -(packetsize)/(bandwidth)

where t(start) is the point in time when the client needs to act on the data contained in the packet, (packetsize) is the number of bytes in the corresponding data packet, and (bandwidth) is the communications bandwidth from the server to the client in bytes per second;

sorting the list of virtual data packets based on the delivery deadlines calculated for each virtual data packet into a sorted list; and

determining the maximum amount of data to be stored in the buffer as a function of time based the size of the virtual data packets and the delivery schedule from said sorted list; and

identifying said minimum buffer size based on said maximum amount of data to be stored.—

--27. (Twice amended) A server-based system for scheduling the delivery of data packets representing one or more media data tracks and for thereby allowing the data packets to be delivered from the server to a client with a given bandwidth so as to minimize the initial delay required for the client to present the data without interruption, comprising:

at least one media database for storing multimedia data packets;

at least one media delivery component for delivering data packets; and

at least one ordering component for ordering the multimedia data into data packages for delivery, wherein said at least one ordering component comprises:

at least one virtual packet list component for creating a list of virtual data packets representative of all data packets to be scheduled for delivery from the server to the client;

at least one calculating component for calculating a delivery deadline for each virtual data packet based on the communications bandwidth from the server to the client and a point in time at which the client must act on the data, wherein the delivery deadline for each virtual data packet are calculated as

t(deadline) = t(start) -(packetsize)/(bandwidth)

where t(start) is the point in time when the client needs to act on the data contained in the packet, (packetsize is the number of bytes in the corresponding data

packet, and (bandwidth) is the communications bandwidth from the server to the client in bytes per second;

and at least one sorting component for sorting the list of virtual data packets based on the delivery deadlines calculated for each virtual data packet, to provide a sorted list.--

--28. (Twice amended) A program storage device readable by machine, tangibly embodying a program of instructions executable by the machine to perform method steps for scheduling the delivery of data packets representing one or more media data tracks, said method allowing the data packets to be delivered from a server to a client with a given bandwidth so as to minimize the initial delay required for the client to present the data without interruption, said method including the steps of:

creating a list of virtual data packets representative of all data packets to be scheduled for delivery from the server to the client;

calculating a delivery deadline for each virtual data packet based on the communications bandwidth from the server to the client and a point in time at which the client must act on the data, wherein the delivery deadline for each virtual data packet are calculated as

t (deadline) = t (start) -(packetsize)/(bandwidth)

where t(start) is the point in time when the client needs to act on the data contained in the packet (packetsize) is the number of bytes in the corresponding data packet, and (bandwidth) is the communications bandwidth from the server to the client in bytes per second; and

sorting the list of virtual data packets based on the delivery deadlines calculated for each virtual data packet, to provide a sorted list.--

Allowable Subject Matter

2. Claims 1, 2, 4-11, 13-17, 19-22 and 24-28 are allowed.

Conclusion

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khanh Dinh whose telephone number is (571) 272-3936. The examiner can normally be reached on Monday through Friday from 8:00 A.m. to 5:00 P.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Zarni Maung, can be reached on (703) 272-3939. The fax phone number for this group is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval IPAIRI system. Status information for published applications may be obtained from either Private PMR or Public PMR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ZARNI MAUNG
SUPERVISORY PATENT EXAMINER

Khanh Dinh
Patent Examiner
Art Unit 2151
2/3/2005